

## Bivariate Data Worksheet Solutions

1.

- a** Positive correlation.
- b** The longer the treatment the greater the loss of weight.

2.

- a** There is no correlation.
- b** The scatter graph does not support the statement that hotter cities have less rainfall.

3.

- a** There is strong positive correlation.
- b** If the number of items increases by 1, the time taken increases by approximately 2.64 minutes.

4.

- a**  $15.2 + 2 \times 11.4 = 38$

As  $50 > 38$ ,  $t = 50^\circ\text{C}$  is an outlier.

- b** The outlier should be omitted, as it is very unlikely that the average temperature was  $50^\circ\text{C}$  in a climate where people need to buy gloves, and so this data point is likely an anomaly.
- c** If the temperature increases by approximately  $1^\circ\text{C}$ , the number of pairs of gloves sold each month decreases by 5.2.

5.

- a** 44 cm is the length of the spring with no mass attached. If a mass of 1 g is attached, the spring will increase in length by approximately 0.2 cm.
- b i**  $m = 150$  is outside the range of the data (extrapolation) so is less likely to be accurate.
  - ii** This particular regression equation should only be used to predict a value of  $s$  given  $m$ . To predict a value of  $m$  given  $s$ , you should use the regression equation of  $m$  on  $s$ .

6.

- a** Moderate negative correlation.
- b**  $-0.7$

7.

- a** Positive correlation, causal
- b** Positive correlation, causal
- c** Zero correlation
- d** Negative correlation, not causal

8.

- a i** Positive  
(As cars increased so did vans)
  - ii** Negative  
(As cars increased, buses decreased)
  - iii** Positive  
(As cars increased, time increased)
- b** Spurious means that there is no direct causal link. Increasing the number of cars does not cause the number of vans to increase. Another factor is likely to cause both to rise, for example, the growth in the population.